

Historic, Archive Document

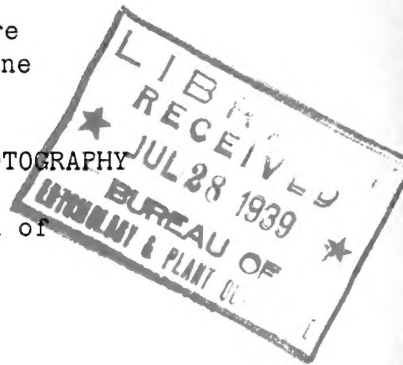
Do not assume content reflects current scientific knowledge, policies, or practices.

July 1939

United States Department of Agriculture
Bureau of Entomology and Plant Quarantine

STAND AND LIGHTING ACCESSORIES FOR INSECT PHOTOGRAPHY

By G. A. Runner and G. W. Still, Division of
Fruit Insect Investigations



A stand and lighting accessories for insect photography are shown in the accompanying illustrations. This equipment was built at the Sandusky, Ohio, field laboratory at small cost, the only machine-shop work necessary being the welding of the two parts of the camera standard and the threading of brass rods supporting the glass stage for holding the object and background.

The stand permits the taking of photographs or photomicrographs with either horizontal or vertical adjustments of the camera or compound microscope. The camera, microscope, and apparatus for lighting the object may be quickly and conveniently adjusted to any desired position.

For horizontal exposures the stand is tilted backward to the position shown in figure 1, with the upper end of the T-iron standard holding the movable carrier for the camera, which is supported by the detachable bracket (j). The microscope, when used for either horizontal or vertical exposures, is attached by a wooden button and a wing nut to the detachable block (b), which is bolted to the base of the standard. This block, or microscope support, is attached to the standard by wing nuts and may be removed when desired.

For vertical exposures the stand is used with the camera in an upright position as shown in figure 2. The glass stage (c) for holding the object or background is adjusted to the desired height above the substage or wooden base of the stand by means of sliding collars with thumb screws on the four brass rods or standards fitting in the floor flanges attached to the substage or base. The glass stage and supports may be easily removed when a microscope is used. Suitable backgrounds may be used either on or below the stage. Figure 2 shows the use of white blotting paper on the stage.

The camera is attached to a holder (figs. 3 and 4, e), which is attached to movable brackets sliding on the T-iron standard (m), thus permitting adjustment and fastening at the desired distance from the object, or from the ocular of a microscope. A sliding metal sleeve fits over and connects the camera opening and the eyepiece of the microscope.

Lighting.--Two No. 4 "Photoflood" lamps operating on 110 volts A. C. current are used as a light source. The floodlights (fig. 2, g) are used in 10" reflectors fitted with $1\frac{1}{2}$ " "Mogul" type sockets. The reflectors are attached to movable upright standards fitted with sliding universal joints or brackets, thus permitting adjustment to the desired distance, height, or angle. The lighting for photomicrographs may be from any available light source and may be either concentrated or diffused, depending upon the type of material to be photographed and the magnification.

Construction of Stand

Stand base (fig. 2, d).--The over-all dimensions of the substage or base are 25" and 31". The base is made of $\frac{3}{4}$ " white pine, tongue and groove. The outer frame or base of the floor supports is of oak 2" x 4". There are two 2" x 4" supports in the middle of the base, from front to rear; these supports are slightly separated to accept the horizontal portion of the T-iron standard. The frame is fastened together with $\frac{3}{8}$ " lag screws, and the base of the upright T-iron standard is fastened to the two middle frame supports by cross bolts and vertical lag screws. Half-inch rubber buttons are attached under the corners of the base frame to assist in leveling the stand.

Adjustable stage for holding object or background (fig. 2, c).--This stage is made of heavy glass, 16" x 24". Four $\frac{5}{16}$ " x 14" brass rods, threaded at the lower end to fit in floor flanges on the base, support the glass stage, each corner resting on a sliding collar fitted with thumb screws, which permits adjustment to any height desired.

Camera support or standard (fig. 2, m; end view fig. 4, m).--The standard is made of T-iron, 2" x $\frac{1}{4}$ " thick. It is L-shaped, and the shorter part is bolted to the middle floor frame supports on the under side of the base. This part is 15" long. The part for supporting the camera and attachments has a length of 55". The sections of the T-iron standards are spot-welded together at the L angle. The strap-iron support for the camera standard (fig. 1, j), used when the stand is arranged for horizontal exposures, is 15" high and detachable; the lower flange of the outer end of the T-iron standard rests in the slot of the support, and a bolt and wing nut are used for fastening it.

Holder for attaching camera (figs. 3 and 4, e).--The camera holder is made of $\frac{3}{4}$ ", 5-ply veneer, width 7" and length 11". It is attached to two lipped sliding brackets, each fitted with a brass roller bearing. The two roller bearings (one shown in fig. 4, L) consist of 2" lengths of brass tubing and they roll on the face of the T-iron support. Through these brass rollers run the $\frac{1}{4}$ " diameter bolts held by wing nuts. The lipped brackets (fig. 4, a) slide on the T-iron standard or camera support (fig. 4, m). The outer face of the veneer holder is $3\frac{1}{2}$ " from the front or face of the T-iron standard. The camera is attached to the holder by the use of regular tripod thumb screws (fig. 4, N).

Holder for attaching compound microscope (fig. 1, b).--This holder consists of a wood block, 3" x 4½" x 6", with felt glued to the outer face. Two ¼" diameter bolts with wing nuts, placed through the block in diagonal corners, permit fastening it to the lower part and on the face of the T-iron standard. The microscope foot is attached to the holder with a projecting ¼" threaded bolt with wing nut and a wooden clamp ½" x 1½" x 6".

Explanation of Illustrations

Figure 1.--Stand, camera, and microscope in position for taking photomicrographs horizontally.

Figure 2.--Stand, glass stage, camera, and lighting accessories in position for taking photographs vertically.

Figure 3.--Close-up view of camera, holder, brackets, and T-iron standard.

Figure 4.--End view of camera holder, brackets, roller bearing, and T-iron standard.

100-100000
100-100000
100-100000
100-100000

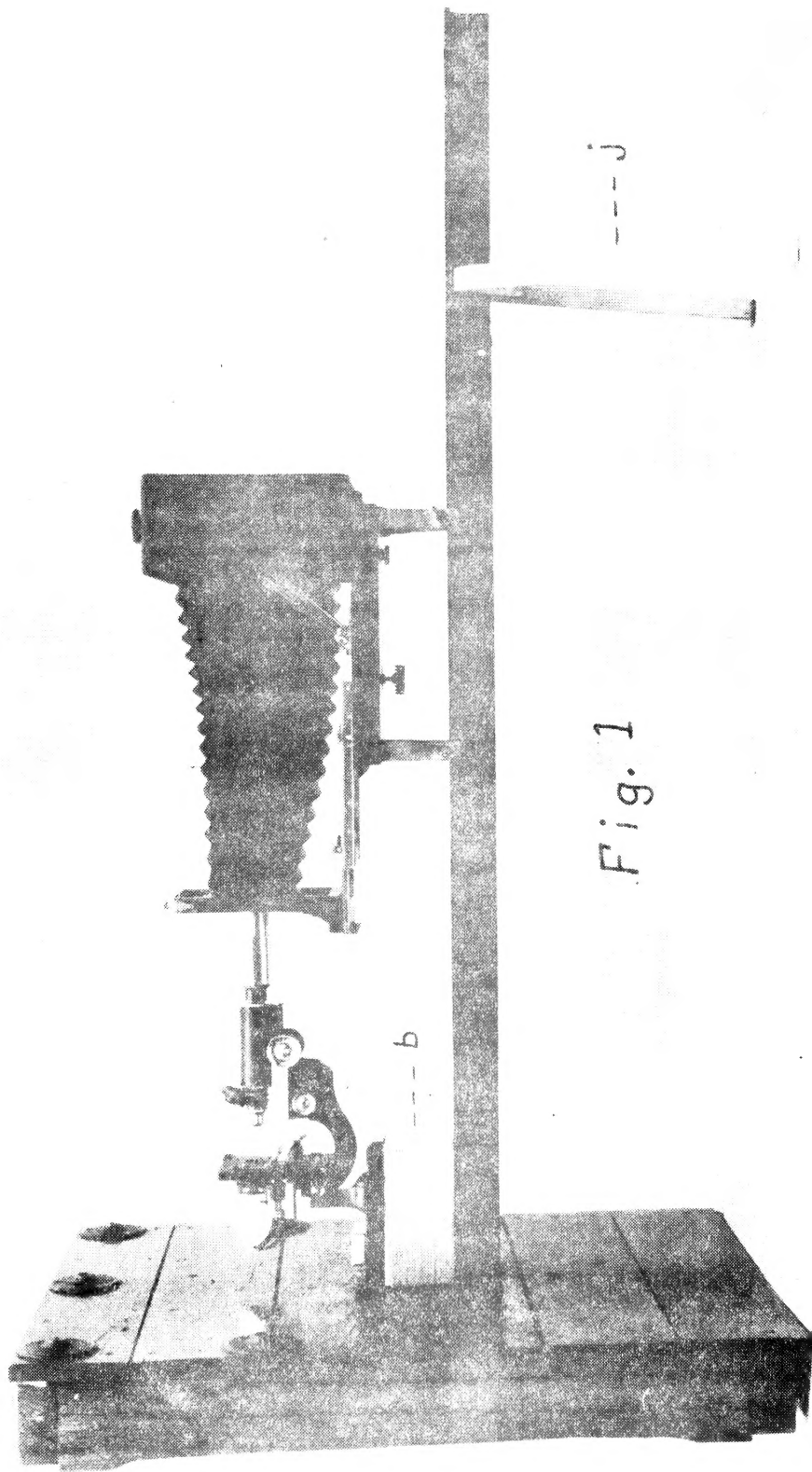
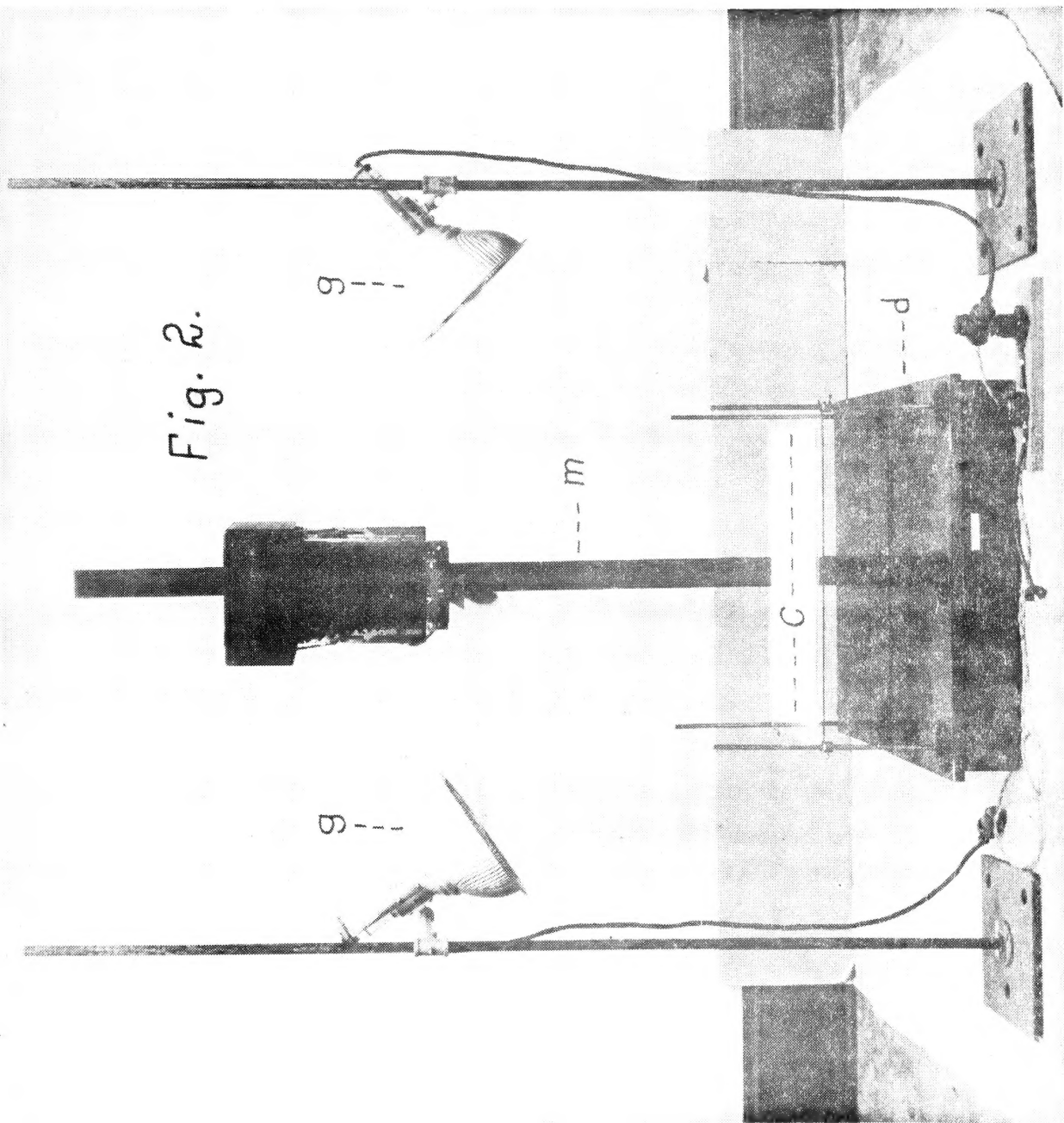


Fig. 1

Fig. 2.



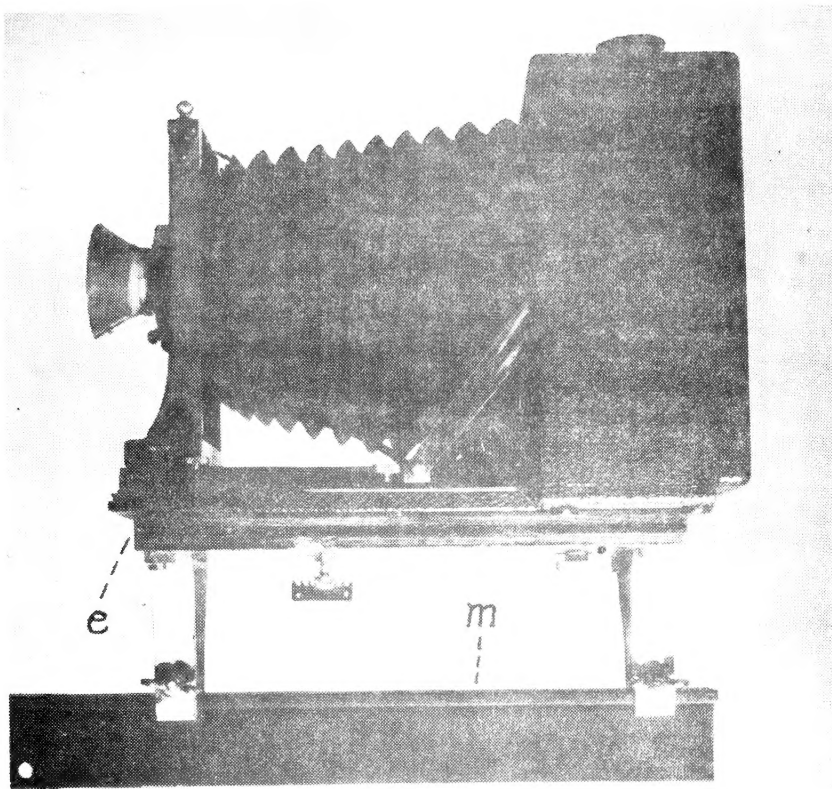


Fig. 3.

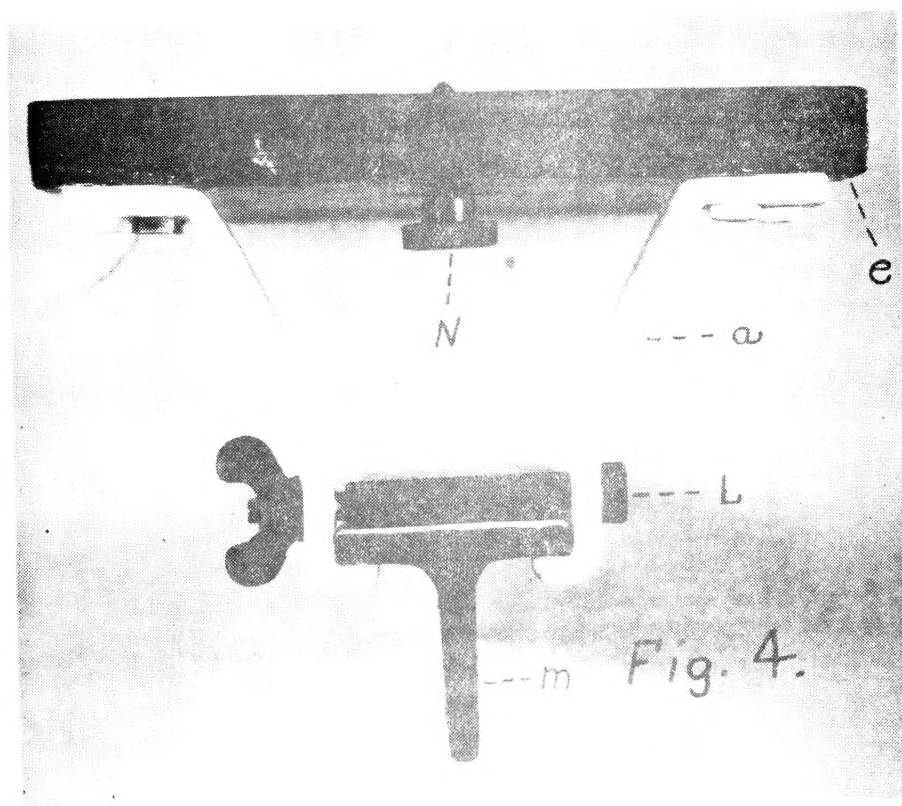


Fig. 4.

Bo

7